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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Carl Towns

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT

PAPER NUMBER

1794

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/533,920	Applicant(s) TOWNS ET AL.	
	Examiner Marie R. Yamnitzky	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 10-13 and 15-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. Applicant's election with traverse of Group I, claims 1-9, in the reply filed on March 04, 2009 is acknowledged. The traversal is on the ground(s) that all the claims have been previously examined by the examiner and therefore there is no undue burden on the examiner. This is not found persuasive because the examiner to whom the application is presently assigned is not the examiner who examined the claims prior to the restriction requirement mailed February 06, 2009 and, as correctly noted in applicant's response filed January 22, 2009, the indenofluorene structure of the previously applied prior art of Becker et al. is not the same as applicant's formula (I) structure. The Becker et al. reference was relied upon for each of the prior art rejections set forth in the final rejection mailed October 22, 2008; those rejections have been withdrawn and prosecution re-opened. Accordingly, the present examiner needs to begin the examination process as if the claims had not previously been examined.

The claims lack unity of invention for the reasons set forth in the restriction requirement mailed February 06, 2009. The requirement is still deemed proper and is therefore made FINAL. However, given the teachings of the prior art applied in this action, the examiner withdraws the requirement for restriction between Group I (claims 1-9) and Group IV (claim 14).

2. Claims 10-13 and 15-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on March 04, 2009. See MPEP 821.04, 821.04(a) and 821.04(b) regarding rejoinder. Note that

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even if present claims 1-9 and 14 were determined to be allowable without further amendment, some of the withdrawn claims do not currently meet the conditions for rejoinder.

3. Claims 1-9 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Clarification is required regarding the “optionally substituted” language set forth in line 1 of claim 1. The repeat units of formula (I) have four variables, R_1 - R_4 , at least one of which must comprise an aryl or heteroaryl group. It is not clear if the “optionally substituted” language:

(a) pertains to R_1 - R_4 and means essentially the same thing as the requirement that at least one of R_1 - R_4 comprises an aryl or heteroaryl group; or

(b) pertains to R_1 - R_4 and means that the possibilities recited for R_1 - R_4 may be further substituted (e.g. an alkyl group may be a substituted alkyl group); or

(c) does not pertain to R_1 - R_4 and means that the unit of formula (I) may be substituted at positions in addition to R_1 - R_4 .

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 8 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Peng et al. in *Acta Polymerica*, Vol. 49, pp. 244-247 (1998).

See the entire article. Peng's polymers, which are disclosed for use in an organic light emitting device, are polymers comprising a repeat unit of present formula (I) wherein one of R₁ and R₂ is an aryl group and the other is hydrogen, one of R₃ and R₄ is an aryl group and the other is hydrogen, and the polymer further comprises a second repeat unit, thus anticipating a polymer per present claims 1, 2 and 8, and an organic light emitting device per present claim 14.

The examiner notes that the present claims do not explicitly limit how the repeat unit of formula (I) is incorporated into the polymer chain. The orientation of the unit as shown in Scheme 1 of the prior art is not outside the scope of the present polymer claims.

6. Claims 1-4, 8, 9 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Frey et al. (WO 02/095841 A2).

See the entire document. In particular, see page 9, lines 1-5, formula (IX) on page 9, p. 11, l. 1-14, and p. 13, l. 7-13.

Frey's conjugated unit of formula (IX) encompasses the repeat unit of present formula (I). While Frey et al. do not provide a specific example of a polymer comprising a repeat unit of present formula (I), it is the examiner's position that given Frey's disclosure, one of ordinary

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skill in the art at the time of the invention could at once envisage homopolymers and copolymers within Frey's disclosure comprising a repeating unit of Frey's formula (IX) wherein each of Z^2 and Z^3 is $C(R^4)(R^5)$ and one or both of R^4 and R^5 is an aryl, aryloxy or arylalkyl group (any of which meets the present claim requirement of an R group that comprises an aryl group). With respect to present claims 8 and 9, Frey et al. teach copolymers, and it is the examiner's position that one of ordinary skill in the art at the time of the invention could at once envisage copolymers comprising repeat units of present formula (I) and triarylamine repeat units given Frey's disclosure of units of formulae (IX)-(XII). Frey's formula (IX) encompasses units of present formula (I), and each of Frey's formulae (X)-(XII) represents a triarylamine repeat unit.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frey et al. (WO 02/095841 A2) as applied to claims 1-4, 8, 9 and 14 above, and further in view of Hu et al. (US 6,479,172 B2).

Frey's disclosure encompasses polymers within the scope of present claims 1-9 and an organic light emitting device comprising such a polymer as per present claim 14. Frey et al. do not, however, provide a specific example of a polymer within the scope of the present claims. It

is the examiner's position that some polymers within the scope of present claims 1-4, 8 and 9 could have been at once envisaged by one of ordinary skill in the art at the time of the invention given Frey's disclosure.

In the alternative, polymers within the scope of present claims 1-4, 8 and 9, and well as polymers within the scope of present claims 5-7, would have been obvious to one of ordinary skill in the art at the time of the invention given Frey's disclosure, and given the disclosure of Hu et al. which demonstrates that compounds having an indenofluorene structure substituted on the fluorene rings were useful as light-emitting compounds for an organic light emitting device. For example, see column 39, line 41-c. 51, l. 57 of the patent to Hu et al. It would have been obvious to one of ordinary skill in the art at the time of the invention to make homopolymers and copolymers having units of Frey's formula (IX). It would have been within the level of ordinary skill of a worker in the art at the time of the invention to make various homopolymers and copolymers having units of Frey's formula (IX) and to select specific possibilities for the variables of formula (IX) from those taught by Frey et al. Based on the disclosure of Hu et al., one of ordinary skill in the art at the time of the invention would have reasonably expected that homopolymers and copolymers of Frey's formula (IX) wherein the Z variables are selected so as to provide alkyl and/or aryl substituted indenofluorene units would provide light-emissive materials that could be used for the purposes taught by Frey et al.

Further with respect to the substituted phenyl groups required by claim 7, Frey et al. teach that aryl groups may be substituted by alkyl groups that are straight or branched-chain and have from 1 to 20 carbon atoms (e.g. see the last two lines on page 12 and p. 13, l. 7-11, of the

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Frey et al. reference), and Hu et al. disclose examples of compounds having 4-t-butyl phenyl groups as part of a substituent on a fluorene ring of the indenofluorene structure. Absent a showing of superior/unexpected results commensurate in scope with the claims, it is the examiner's position that it would have been within the level of ordinary skill of a worker in the art at the time of the invention to determine suitable substituents for indenofluorene units within the scope of Frey's formula (IX) structure with knowledge in the art that various substituted aryl groups, and various aryl-substituted groups, were known to be useful as substituents for light-emitting indenofluorene compounds.

9. When making the rejection under 35 U.S.C. 103(a) that is set forth in this Office action, the examiner has taken into consideration the data previously submitted in the Rule 132 Declaration filed August 01, 2008. It is the examiner's position that the data do not demonstrate unexpected results. Even if the examiner were to be persuaded that the data demonstrate unexpected results, the polymers described in the declaration are not commensurate in scope with the claimed polymers. For example, the claim 1 language requiring that at least one of R₁-R₄ "comprises an aryl or heteroaryl group" does not limit the at least one of R₁-R₄ to an aryl or heteroaryl group; the proviso could be met by an aryloxy or heteroaryloxy group, or by an alkyl group that is further substituted by an aryl or heteroaryl group.

10. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday and Wednesday-Friday.

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The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

/Marie R. Yamnitzky/
Primary Examiner, Art Unit 1794

MRY
May 11, 2009